

## CLAIMS

## 1. A transmission line connecting structure comprising:

a transmission line including a dielectric substrate, an electrode formed on one side of the dielectric substrate, and a slot having a predetermined width and formed at the electrode, a plurality of such transmission lines being connected;

wherein an electrode of one of the plurality of transmission lines and an electrode of another one of the plurality of transmission lines are provided at a distance from one another with a gap therebetween;

and wherein a resonator is connected to said transmission line, one end of the resonator is open on the gap side, the resonator is provided at each electrode so as to be able to couple with one another;

and wherein a stub for suppressing leakage of a signal in the gap between the plurality of electrodes is provided at at least one of said plurality of electrodes;

and wherein, when the wavelength of a high-frequency signal in odd mode which propagates said transmission line is  $\lambda_{g\_odd}$ , the length of the stub is set to the approximate value of  $\lambda_{g\_odd}/4$ , and the length between said resonator and stub is set to a value sufficiently smaller than  $\lambda_{g\_odd}/2$ .

## 2. A transmission line connecting structure comprising:

a transmission line including a dielectric substrate, an electrode formed on each side of the dielectric substrate, and a slot having a predetermined width, each slot opposing one another while sandwiching said dielectric substrate, the slot being formed at each electrode, a plurality of such transmission lines being

connected;

wherein an electrode of one of the plurality of transmission lines and another electrode of another one of the plurality of transmission lines are provided at a distance from one another with a gap therebetween;

and wherein a resonator is connected to said transmission line, one end of the resonator is open on the gap side, the resonator is provided at each electrode so as to be able to couple with one another;

and wherein a stub for suppressing leakage of a signal in the gap between the plurality of electrodes is provided at at least one of said plurality of electrodes;

and wherein, when the wavelength of a high-frequency signal in odd mode which propagates said transmission line is  $\lambda_{g\_odd}$ , the length of the stub is set to the approximate value of  $\lambda_{g\_odd}/4$ , and the length between said resonator and stub is set to a value sufficiently smaller than  $\lambda_{g\_odd}/2$ .

3. A transmission line connecting structure comprising:

a transmission line including a dielectric substrate, an electrode formed on one side of the dielectric substrate, and a slot having a predetermined width and formed at the electrode, a plurality of such transmission lines being connected;

wherein an electrode of one of the plurality of transmission lines and an electrode of another one of the plurality of transmission lines are provided at a distance from one another with a gap therebetween;

and wherein a resonator is connected to said transmission line, one end of the resonator is open on the gap side, the resonator is provided at each electrode so as to be able to couple with one another;

and wherein a stub for suppressing leakage of a signal in the gap between the plurality of electrodes is provided at at least one of said plurality of electrodes;

and wherein when the wavelength of a high-frequency signal in odd mode which propagates said transmission line is  $\lambda_{g\_odd}$ , the length of the stub is set to the approximate value of  $\lambda_{g\_odd}/4$ , and the length between said resonator and stub is set to the approximate value of  $\lambda_{g\_odd}/2$ .

4. A transmission line connecting structure comprising:

a transmission line including a dielectric substrate, an electrode formed on each side of the dielectric substrate, and a slot having a predetermined width, each slot opposing one another while sandwiching said dielectric substrate, the slot being formed at each electrode, a plurality of such transmission lines being connected;

wherein an electrode of one of the plurality of transmission lines and an electrode of another one of the plurality of transmission lines are provided at a distance from one another with a gap therebetween;

and wherein a resonator is connected to said transmission line, one end of the resonator is open on the gap side, the resonator is provided at each electrode so as to be able to couple with one another;

and wherein a stub for suppressing leakage of a signal in the gap between the plurality of electrodes is provided at at least one of said plurality of electrodes;

and wherein, when the wavelength of a high-frequency signal in odd mode which propagates said transmission line is  $\lambda_{g\_odd}$ , the length of the stub is set to the approximate value of  $\lambda_{g\_odd}/4$ , and the length between said resonator and stub is set to the approximate value of  $\lambda_{g\_odd}/2$ .

5. A transmission/reception device using a transmission line connecting structure according to one of the Claims 1 through 4.